

EXAMINING RELATIONSHIPS BETWEEN ATHLETIC DEPARTMENT FINANCES,
ATHLETIC SUCCESS, AND ACADEMIC SUCCESS AMONG NCAA DIVISION I FBS
INSTITUTIONS

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A thesis submitted to the faculty of the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Master of Arts in the Department of Exercise and Sport Science (Sport Administration).

Chapel Hill
2014

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ABSTRACT

Grant Leiendecker: Examining Relationships between Athletic Department Finances, Athletic Success, and Academic Success among NCAA Division I FBS Institutions
(Under the direction of Barbara Osborne)

Common wisdom holds that increased spending leads to competitive success and that a tradeoff exists between athletics and academics. The purpose of this study is to determine whether relationships exist between relative competitive success as well as student-athlete academic success of NCAA Division I FBS athletic departments and each of the following factors: (a) how much institutions spend on athletics overall, and per participant, (b) how much institutions spend on revenue sports and, (c) how much revenue institutions generate from revenue sports.

EADA data, NCAA Graduation Success Rates, and Directors' Cup standings were used for the years 2004-05 through 2011-12. Simple and multiple regression analyses found significant relationships between Directors' Cup points, NCAA GSR, and each independent financial variable. Although administrators should give careful consideration when making practical forecasting decisions based on these findings, results prove valuable for shaping broad-based principles and goals.

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CHAPTER 1

INTRODUCTION

In today's intercollegiate athletics landscape there is a lot of talk and concern surrounding the financial decisions that are being made by collegiate athletic departments. Specifically, college athletic departments are spending an incredible amount of money on their operations. In 2012, the University of Texas athletic department spent \$138.3 million on its operations (Berkowitz & Upton, 2013). Although not all NCAA Division I programs can afford to spend like the University of Texas, this number goes to show that intercollegiate athletics is indeed a big business. In addition, the spending is not only massive, but it is trending upward on an annual basis. According to a study completed by Orzag and Israel (2009), it was found that NCAA Division I athletic programs increased their expenditures by 11% per year from 2004-2007. More recently, the *SportsBusiness Journal* (SBJ) reported that more than one-half of schools from the six major Bowl Championship Series (BCS) member conferences have increased their budgets by ten percent or more in just two years from 2010 to 2012 (McEvoy, Morse, & Shapiro, 2013). In the Knight Commission report of 2009, they estimated that the top athletic programs are expected to have athletics budgets exceeding \$250 million by 2020.

One might wonder where the revenues are coming from to be able to support such large expenditures. Currently, the most significant source of revenue among major NCAA Division I athletic programs can be attributed to television media rights (McEvoy et al., 2013). In football, the five BCS bowl games distribute in excess of \$174 million annually (McEvoy et al., 2013). In basketball, CBS and Turner agreed to terms with the NCAA for rights to broadcast the "March

Madness” men’s basketball tournament from 2011 to 2028 for \$10.8 billion (Denhart, Villwock, & Vedder, 2010). In addition to television revenues, other factors leading to dramatic increases in college sports revenue generation in recent years include ticket sales, charitable contributions, and corporate sponsorships (McEvoy et al., 2013). In 2010, ticket sales accounted for 29% of generated revenue at Football Bowl Subdivision (FBS) institutions (McEvoy et al., 2013).

With such large amounts of money pouring into the major NCAA conferences, there is no question about the demand for college sports. The market has clearly demonstrated that consumers have a need for this form of entertainment. However, along with the growth in external revenues, there has also been an increased reliance on institutional subsidies. In 2012, the subsidies for Division I programs totaled \$2.3 billion (Berkowitz & Upton, 2013). This number amounted for nearly a third of the overall money spent by Division I programs (Berkowitz & Upton, 2013). The increased reliance on institutional subsidies is a cause for concern within the higher education community.

Regardless of how the massive budgets of NCAA FBS athletic departments are supported, there are important questions that need to be answered as a result of these allocations. Although NCAA athletic departments are not for-profit businesses, an explanation is sought after as to the level of return on these investments. The general belief amongst athletic departments is that increased spending leads to increased athletic success (Knight Commission on Intercollegiate Athletics, 2010). Is this really the case among NCAA FBS athletic departments? Also, if the “revenue sports” of football and men’s basketball are the drivers of the bus, how essential is revenue and spending related to those sports to the success of the athletic department as a whole? Further, it is also important to determine how these massive budgets are relating to other primary athletic department goals, such as graduating student-athletes. If there does happen

to be a relationship between athletic success and spending, how does that relate to the academic success of the student-athletes? Are student-athletes failing to make the grade as a result of traveling across the country and focusing all of their time on their sports? There are many questions to be answered regarding the relationship between athletic expenditures, athletic success, and academic success, and this study will seek to find them.

There have been several studies that have attempted to analyze the relationships between athletic department finances, athletic success, and academic success. However, these studies could be improved in several areas in order to reveal important data. This study will serve as an improvement on previous studies of the relationships between some of the most critical measurements of intercollegiate athletics success.

Purpose of the Study

The purpose of this study is to determine whether relationships exist between relative competitive success as well as student-athlete academic success of NCAA Division I FBS athletic departments and each of the following factors: (a) how much institutions spend on athletics overall, and per participant, (b) how much institutions spend on revenue sports and, (c) how much revenue institutions generate from revenue sports. This study will also seek to determine the strength of significant relationships.

Research Questions

- 1.) Is there a relationship between the amount of Adjusted Director's Cup Points an institution earns and:
 - a. how much it spends on athletics overall?
 - b. how much it spends on athletics per participant?

- c. how much it spends on football and men's basketball?
- d. how much revenue it brings in from football and men's basketball?
- e. academic success of student-athletes as measured by GSR?
- f. academic success of student-athletes as measured by GSR and how much it spends on athletics overall?
- g. academic success of student-athletes as measured by GSR and how much revenue it brings in from football and men's basketball?

2.) Is there a relationship between academic success of student-athletes as measured by GSR and:

- a. how much it spends on athletics overall?
- b. how much it spends on athletics per participant?
- c. how much it spends on football and men's basketball?
- d. how much revenue it brings in from football and men's basketball?

Hypotheses

1. A relationship exists between the amount of money an institution spends on athletics and its finish in the final Directors' Cup standings.
2. A relationship exists between the amount of money an institution spends on athletics (per participant) and its finish in the final Directors' Cup standings.

3. A relationship exists between the amount of money an institution spends on its football and men's basketball programs and its finish in the final Directors' Cup standings.
4. A relationship exists between the amount of revenue an institution brings in from its football and men's basketball programs and its finish in the final Directors' Cup standings.
5. A relationship exists between the academic success of an institution's student-athletes as measured by GSR and its finish in the final Directors' Cup standings.
6. A relationship exists between the amount of money an institution spends on athletics overall, the academic success of its student-athletes as measured by GSR, and its finish in the final Directors' Cup standings.
7. A relationship exists between the amount of revenue an institution brings in from its football and men's basketball programs, the academic success of its student-athletes as measured by GSR, and its finish in the final Directors' Cup standings.
8. A relationship exists between the amount of money an institution spends on athletics and the academic success of its student-athletes as measured by GSR.
9. A relationship exists between the amount of money an institution spends on athletics (per participant) and the academic success of its student-athletes as measured by GSR.
10. A relationship exists between the amount of money an institution spends on its football and men's basketball programs and the academic success of its student-athletes as measured by GSR.

11. A relationship exists between the amount of revenue an institution brings in from its football and men's basketball programs and the academic success of its student-athletes as measured by GSR.

Definition of Terms

Relative Competitive Success: An institution's competitive success was determined by its points in the final Directors' Cup standings, relative to all other schools in the final standings.

NACDA Directors' Cup: An award system for broad based intercollegiate athletics department success that awards points to institutions based on how an institution's top 20 (10 men's, 10 women's) athletic teams finished their seasons.

Academic Success: Determination of how the student-athletes performed academically as measured by the NCAA Graduation Success Rate.

NCAA Graduation Success Rate: Measurement of graduation success that is specifically calculated for NCAA student-athletes. Used to evaluate past academic performance of intercollegiate athletics teams.

Institutional Athletic Spending: Total amount of money spent by institutional athletic department on annual basis. This data will be retrieved from EADA database.

Revenue Sports Spending: Total amount of money spent by an athletic department on its football and men's basketball programs on annual basis. This data will be retrieved from EADA the database.

Revenue Sports Revenue: Total revenue produced by an athletic department's football and men's basketball programs on an annual basis. This data will be retrieved from the EADA database.

Revenue Sports: Football and men's basketball programs - The only intercollegiate sports that consistently generate revenue for athletic departments.

Equity in Athletics Data Analysis (EADA): Public database that compiles financial data from all NCAA institutions. All financial data will be collected from this database.

Assumptions

For the purposes of this study, it was assumed that:

- EADA information provided by institutions was complete and accurate.
- The available EADA data was entered exactly as submitted by the institution.
- NCAA GSR information provided by the NCAA was complete and accurate.
- The available NCAA GSR data was entered exactly as submitted by the NCAA.
- The available NACDA Directors' Cup data was entered exactly as submitted by NACDA.

Delimitations

This study only examined data from NCAA Division I FBS institutions listed in both the final Division I Directors' Cup standings and the EADA data for the 2004-2005 academic year through 2011-2012. Rather than using all reported EADA data, this study used the reported grand total expenses, unduplicated number of participants (male and female), and total revenue and expenses by team (football and men's basketball). Rather than using all reported NCAA GSR data, this study used the reported overall athletic department GSR.

Limitations

While the data set for this study was intended to include all institutions who, in any given year, both earned Directors' Cup points and had available EADA data, this was not the case.

Institutions that scored Directors' Cup points but had incomplete or missing EADA data were not included. Also, for the 2004-2005 and 2005-2006 academic years, the available Directors' Cup final standings only include the 100 highest scoring institutions, so only those institutions were included for those two years.

Significance of the study

As mentioned, similar studies have been completed that measured the relationship between athletic expenditures and athletic success. However, this study will dig deeper into this relationship by looking closely at the revenue sports while also adding an analysis of how academic success is affected by both athletic department finances and athletic success. The results from this study will be beneficial not only to researchers, but also to intercollegiate athletics administrators that are in decision-making positions within NCAA Division I athletic departments. Discovering variables that play significant roles in the academic and athletic success of student-athletes may direct practitioners in their efforts to not only achieve measurable success, but to heighten the student-athlete experience.

CHAPTER 2

REVIEW OF LITERATURE

Introduction

This study compares various measures of athletic department finances, academic success, and athletic success in competition and examines whether or not relationships exist amongst them within National Collegiate Athletic Association (NCAA) Division I FBS institutions. The data being used for this analysis originates from each institution's annual National Association of Collegiate Directors of Athletics' (NACDA) Directors' Cup rankings, Equity in Athletics Disclosure Act (EADA) annual reports, and annual NCAA Graduation Success Rate (GSR) scores. Each of the three sets of data will be introduced while providing a brief history of their use in previous research. The economic climate of NCAA Division I athletics departments will also be discussed, including specific budget items that comprise a large portion of the overall budget. Next, previous studies relating to the relationships amongst these variables will be introduced while demonstrating the need for further examination within this field of research.

The National Association of Collegiate Directors of Athletics (NACDA) Directors' Cup

There are various rankings that measure athletic success among NCAA institutions, but there is one ranking that stands alone when it comes to measuring overall athletic department on-field success. The NACDA Directors' Cup is considered to be the crowning achievement in college athletics and was established in 1993 by NACDA and USA Today (NACDA, 2013). The Directors' Cup program was established to honor institutions maintaining a broad-based

program, achieving success in both men's and women's sports (NACDA, 2013). The Directors' Cup is awarded in each NCAA Division (I,II,III), NAIA, and NJCAA, with a different scoring structure for each division.

The Directors' Cup scoring structure of NCAA Division I consists of an aggregate point total for the institution's top 20 sports (10 men's and 10 women's) in which the NCAA conducts a championship. If an institution only sponsors 10 sports for a specific gender, all 10 sports will count towards the overall point total. However, if the institution sponsors more than 10 sports for a specific gender, the overall point total will only include the top 10 scores from that gender's pool of qualifying sports. For sports other than FBS football, a predetermined point total is awarded to a team based on their finish in their respective NCAA championship. For bracket sports, points are awarded based on the size of the bracket. Any team finishing 65th or lower (that also made it into the bracket) will receive 5 points. The NCAA champion earns 100 points, while the rest of the bracket is awarded points incrementally based on their relative finish. Non-bracketed sports are scored in a similar fashion, but points are awarded incrementally to each individual place, with the national champion earning 100 points. For FBS football teams, points are awarded incrementally to teams finishing in the top 25 of the USA Today poll, with the top team earning 100 points and 25th team earning 49 points. Unranked bowl game winners receive 45 points and unranked bowl game losers receive 25 points (NACDA, 2013).

Once the total scores are tallied, the schools are then rank ordered and the rankings are published on NACDA's website. The winner of the Directors' Cup receives a crystal trophy and is recognized as the top intercollegiate athletics program in the nation during NACDA's annual convention (NACDA, 2013). The inaugural NACDA Directors' Cup was won by The University

of North Carolina at Chapel Hill in 1993, but has been won by Stanford University every year since (NACDA, 2013).

Although Stanford has dominated the field over the past 20 years, many schools pride themselves on their Directors' Cup finish and use it for benchmarking when setting athletic department goals. The University of North Carolina at Chapel Hill lists finishing in the top ten in the NACDA Directors' Cup ranking as a department goal in its recently published athletics department mission statement (UNC - Chapel Hill Department of Athletics, 2013). Many athletic director's contracts now include incentive clauses that are dependent on the institution's finish in the NACDA Directors' Cup final rankings (Brady, 2011). In 2011, University of North Carolina at Chapel Hill Athletic Director, Dick Baddour, had a contract bonus worth \$24,583 tied to the institution's finish in the final NACDA Directors' Cup rankings (Brady, 2011). These types of goals and incentives demonstrate the importance that FBS institutions place on their finish in the Directors' Cup standings.

There have been several studies that have utilized NACDA Directors' Cup standings in an attempt to analyze the relationship between broad-based athletic success and athletic expenditures (Freeman, 2012; Jones, 2012; Lawrence, Li, Regas, & Kander, 2012; Orszag & Israel, 2009; Won, 2004). These studies have varied in nature and also have reached different conclusions. Their results will be expounded upon further along in this chapter.

Equity in Athletics Disclosure Act (EADA)

The Equity in Athletics Disclosure Act is a federal law enacted in 1994 that "requires co-educational institutions of postsecondary education that participate in a Title IV, federal student financial assistance program, and have an intercollegiate athletic program, to prepare an annual report to the Department of Education on athletic participation, staffing, and revenues and

expenses, by men's and women's teams” (U.S. Department of Education, 2009). The annual report submitted by NCAA institutions contains information such as male and female participation numbers, gender and employment status of coaches, average coaches’ salaries, and other general athletic department expenses and revenues (Freeman, 2012). This data is available from the Office of Postsecondary Education’s EADA Cutting Tool website, which contains a comprehensive, searchable database of financial reports submitted by all NCAA institutions (with the exception of the US Service Academies). This database provides ease of access to anyone seeking to analyze NCAA institutional athletic spending.

There are also two other databases that provide comprehensive financial data for NCAA Division I athletic departments, but each set of data has its limitations. *USA Today* provides an annual financial report of NCAA Division I institutions with detailed data that is obtained through public open records requests (USA Today, 2012). However, this dataset does not include private institutions, which in turn limits its utility when attempting to compare all Division I institutions. The NCAA also collects standardized reports on athletics spending and revenues that it provides to its presidents and chancellors in order to assess their athletics programs’ financial situation and patterns relative to peer institutions (Knight Commission on Intercollegiate Athletics, 2010). However, this dataset is not made available to the general public, therefore rendering itself useless when it comes to public research aimed at comparing NCAA institutions.

There have been critics of the EADA database as well, citing a concern with the lack of regulation in reporting standards. According to the Knight Commission report in 2010, “The financial data in these reports lack comparability because the law requires colleges to report information in overly broad categories, permitting wide variation from institution to institution”

(Knight Commission on Intercollegiate Athletics, 2010). However, considering the drawbacks associated with other NCAA institutional spending datasets, the EADA database has been determined to be the most comprehensive, publicly accessible collection of athletic department spending data (Freeman, 2012).

The Equity in Athletics Disclosure Act database has been relied upon by numerous researchers within the field of intercollegiate athletics (Eigenbrot, 2012; Freeman, 2012; Jones, 2012; Lawrence et al., 2012; Won, 2004). The EADA database will provide the necessary financial data needed to complete this study.

NCAA Graduation Success Rate (GSR)

In 2004, the NCAA Division I enacted legislation with a goal of encouraging “improved academic performance and progress toward graduation for all student-athletes” (NCAA, 2003). In addition to the federally mandated graduation rate (FGR), the NCAA introduced two new measures of academic success: the Academic Progress Rate (APR) and the Graduation Success Rate (GSR). Before these metrics were introduced, the NCAA used the FGR as the academic measurement tool of student-athletes. The FGR was introduced in 1990 when the federal government passed the Student-Right-to-Know and Campus Security Act (P.L.101-540) requiring universities that receive federal funds to report graduation rates for all students, and more specifically to report separately the graduation rates for student athletes (LaForge & Hodge, 2011). The FGR was deemed misleading and inaccurate by NCAA coaches and administrators as a measure of academic success because it does not take into account student-athletes in good academic standing that transfer into or out of an institution (LaForge & Hodge, 2011). Under the FGR calculation, if a student-athlete leaves the institution for any reason, that student-athlete will still be included in the institution’s FGR as having not graduated, therefore

adversely affecting the graduation rate. It is for this reason that the NCAA adopted new academic measures in 2004.

The APR was developed as a “real-time” assessment of each team’s academic performance and it awards points for academic eligibility, retention and graduation on a term-by-term basis (NCAA, 2003). The APR is currently utilized throughout NCAA Division I as an academic measuring stick and is tied to a penalty system that punishes programs that do not exhibit a required level of academic progress. While first time violators are granted some leniency with a warning, repeat offenders face losing scholarships, recruiting abilities, practice time and eventually postseason bans or banishment from the NCAA (Denhart et al., 2010). This measurement is useful for athletic departments in terms of measuring their student-athletes’ academic progress at any point in time and is tracked on a semester-by-semester basis. The APR creates an opportunity to pinpoint academic issues, diagnose problems, and seek solutions that are appropriate for the current circumstances of the institution (LaForge, L. & Hodge, J., 2011). It is considered a predictor of GSR and reflects academic progress as opposed to performance. The NCAA publishes APR data by sport for institutions on an annual basis, but it does not provide an “institution-wide” average score. Due to the APR’s focus on detailing academic progress as opposed to past performance as well as its lack of institutional-level reporting, this measurement will not be used as the academic success variable in the analysis.

The Graduation Success Rate was developed in an effort to create a new and improved measure of historical student-athlete academic performance. For years, a criticism of the Federal Graduation Rate by college coaches and athletic administrators was that it inaccurately and unfairly measured the academic performance of their players and teams (Sack, Park, & Thiel, 2011). Stemmed by the criticism from coaches and administrators, the NCAA’s GSR improved

on the FGR by accounting for the movement among institutions by NCAA student-athletes. The GSR takes into account incoming transfers who go on to graduate and outbound transfers who leave an institution in good academic standing (i.e. eligible to compete in the next academic term) (NCAA, 2012b). The GSR captures 37 percent more student-athletes than the federal rate, thus making it a more accurate reflection of student-athletes' academic success (Denhart et al., 2010).

The Graduation Success Rate is calculated by measuring the percentage of full-time freshman enrollees that graduate from an institution within six years. There are no penalties or consequences for institutions that exhibit low GSR's; it is solely utilized as a measurement of past performance. For college freshmen cohorts ranging from 1998-2005, the NCAA has provided GSR data for each NCAA Division I institution on an annual basis. The GSR data is provided for each sport within a particular institution, as well as an average GSR for all student-athletes at that institution. For this study's purposes of comparing the overall academic success of all student-athletes to any number of variables, the average institutional GSR of all student-athletes will be used.

The major strength of the NCAA GSR is its recognition that student-athletes often take a different path to graduation than normal students (Sack et al., 2011). However, there are several weaknesses associated with the GSR as well. One weakness of the GSR is the measurement's ineffectiveness when comparing graduation success of student-athletes to graduation success of the overall student body. The reason that this comparison is ineffective is because GSR and FGR are two vastly different measurements, one focusing on college retention and one focusing on student-athlete persistence (Sack et al., 2011). A comparison of the two rates would be akin to comparing apples to oranges. Another weakness of the GSR is that the rate does not capture all

graduation data of student-athletes. At present, the NCAA has no way of knowing the exact number of student-athletes who leave that actually graduate later on (Sack et al., 2011). To explain, any student-athlete that leaves an institution in good academic standing but chooses to become a professional or chooses never to return to a school will not be included in the GSR calculation. This method of calculation is helpful to institutions that lose student-athletes (assuming good academic standing) but harmful to capturing student-athlete graduation data in a broad sense.

Although there are several weaknesses associated with the calculation of the GSR, those weaknesses apply in the broad context of comparing student-athletes to the general student body and looking at NCAA graduation data from a wide lens. In terms of comparing student-athlete academic success between NCAA Division I FBS athletic departments, the GSR will serve as the best available academic measurement.

Economic Climate of NCAA Division I

Intercollegiate athletics has grown into big business within the framework of non-profit, higher education. The market for college athletics has become such that we are seeing conference and NCAA media rights contracts being signed to the tune of billions of dollars (Knight Commission on Intercollegiate Athletics, 2010). Spending amongst NCAA Division I institutions has skyrocketed in recent years, and although the market for intercollegiate athletics has continued to grow, much concern has been raised about the sustainability of this increased spending (Knight Commission on Intercollegiate Athletics, 2010). At public colleges and universities, Division I athletic programs were a \$6 billion enterprise in fiscal year 2010. At the same time, colleges and universities have struggled to control cost escalation elsewhere on campus due to declining state support and endowment income as well as rising tuition costs

(Desrochers, 2013).

In a quest to win championships, Division I athletic departments are spending exorbitant amounts on coach's contracts, recruiting, travel costs, facility improvements and more. In fiscal year 2010, the average amount spent by Division I FBS athletic departments totaled \$45 million, with a range from \$130 million to \$10 million (Desrochers, 2013). This wide range of resources, even between FBS programs, has created a "haves" and "have-nots" environment. There seems to be a prevailing wisdom that increased spending will result in increased athletic performance, which has led to an intercollegiate athletics "arms race" (Denhart et al., 2010). However, the theory that spending more money on athletics programs will lead to greater athletic success and greater revenues is unfounded (Knight Commission on Intercollegiate Athletics, 2010). In an aggregate sense, this theory may be doomed to failure considering that in all intercollegiate sports there is a loser for every winner (Denhart et al., 2010).

The upward trends in spending throughout the NCAA Division I landscape have garnered much attention from the media and the higher education community. As a result, recent research has been dedicated to this topic in an attempt to both quantify and make recommendations for a remedy to the situation. A prominent and well-known study completed by the Knight Commission on Intercollegiate Athletics in 2010 cited concerns of lopsided spending on athletics and academics among NCAA Division I institutions, with athletic spending growing at a pace 2 to 3 times that of academic spending (Knight Commission on Intercollegiate Athletics, 2010). According to their data, Division I institutions with football spent \$91,936 per student-athlete in 2010, approximately seven times the spending per normal student of \$13,628 (Knight Commission on Intercollegiate Athletics, 2010). This spending has continued to grow in recent years and has not been slowed by the recession, unlike the academic spending slowdowns that

have been seen among colleges and universities (Desrochers, 2013).

Studies have also cited concerns of intercollegiate athletic programs needing to rely on institutional subsidies in order to continue to operate. The Knight Commission stated that the “reliance on institutional resources to underwrite athletics programs is reaching the point at which some institutions must choose between funding sections of freshman English and funding the football team” (Knight Commission on Intercollegiate Athletics, 2010, p.6). According to University of Cincinnati faculty chairwoman Marla Hall, UC faculty are “concerned about the use of general fund money for anything that is not central to the academic mission of the university. And there does not appear to be a direct correlation between athletic departments' budgets and the success of their teams” (Berkowitz, Gillum, & Upton, 2010, para. 7). In 2010, Division I FBS schools (on average) relied on institutional subsidies and student fees that totaled 17.7 percent of their overall budget. However, top spending FBS institutions are more likely to be profitable and pose less of a financial burden on their universities than other FBS and Division I athletic departments (Desrochers, 2013).

Studies have also raised concern for the overall pace of growth for athletics spending amongst NCAA Division I institutions. According to their data, the Knight Commission estimates average budgets of the top ten spenders in NCAA Division I to reach \$165 million by 2015 and \$250 million by 2020. They summarized this projection and its potential impact in the context of higher education as follows:

In brief, if the business model of intercollegiate athletics persists in its current form, the considerable financial pressures and ever-increasing spending in today's college sports system could lead to permanent and untenable competition between academics and athletics. More broadly, this model could lead to a loss of credibility not just for

intercollegiate sports but for higher education itself (Knight Commission on Intercollegiate Athletics, 2010, p. 7).

This statement, as bold as it is, clearly defines the level of concern that has been reached on the topic of growing athletic department spending.

Another major characteristic of the intercollegiate athletics financial landscape is the existence and prominence of the “revenue sports”. The “revenue sports” refer to football and men’s basketball, as they are the only two sports within intercollegiate athletics that consistently generate revenue. From 2004-12, between 50-60% of football and men’s basketball programs reported net revenues for each of the nine years reported (NCAA, 2012a). During that same time period, football and men’s basketball revenues comprised 58% (on average) of DI FBS athletic department budgets (NCAA, 2012a). These figures demonstrate just how much NCAA Division I FBS athletic departments depend on football and men’s basketball revenues. NCAA President Mark Emmert describes the importance of “revenue sports” revenue generation as follows:

As a president, I say to my women’s golf fans, ‘The most important thing you can do is buy football tickets.’ If you love rowing, buy football tickets. If you love cross-country, buy football tickets. We couldn’t do any of those other sports if we weren’t successful in football. In the NCAA, we can’t support anything else we love unless we’re successful in Division I men’s basketball. Whether you like that or not, it’s just a fact. But we have to make the case for what we do with those resources (Mark Emmert, 2010, para. 9).

As indicated, the reliance on football and men’s basketball revenues throughout NCAA Division I FBS is not only prominent, but also transparent.

There are many questions that need to be answered related to the escalation of Division I

athletic department spending. The question of the sustainability of the spending growth has not been answered, and may not be answered in the near future. However, this study will attempt to address the spending concerns as they relate to athletic department competitive success and academic success of student-athletes, in an effort to qualify the rationale of heightened athletic department spending.

Relationships Between Finances and Athletic Success

Several studies examining relationships between athletic department finances and athletic success have been completed, with varying results among them. One study originally completed in 2003 and then repeated in 2009 using more recent data looked at athletic department expenditure trends and compared these to revenues as well as athletic success (Orszag & Israel, 2009). This study focused primarily on Division I FBS football and men's basketball programs and how expenditures, revenues and success related. In Orszag and Israel's first study, no evidence was found for a link between higher expenditures on football or basketball and greater team success, nor was a link found between greater team success and higher revenues (Orszag & Israel, 2009). However, in its follow up study completed in 2009, a small positive and statistically significant relationship was found between greater operating expenditures on football and team success. For the sport of men's basketball, they did not find a significant relationship between basketball operating expenditures and team success (Orszag & Israel, 2009). Both comparisons used team's winning percentages as the measure of team success. Although a statistically significant relationship was found between football expenditures and team success, the study noted that this relationship may have reflected reverse causality, meaning that higher expenditures could be a result of a the team having a successful season and having incurred additional expenses by attending and playing in a bowl game (Orszag & Israel, 2009). The study

concluded:

There is weak evidence that increasing “team-related” expenditures on football increases the chances of a successful football season, and that this success may increase revenue. However, this combined result does not extend to other types of football spending nor any basketball spending, and we feel that more work (with additional data generated in future years) is required to have confidence in this result for football, particularly given the reverse causality concerns (Orszag & Israel, 2009, p.9).

This study was strong in its methods and serves as a good foundation for research relating to the relationship athletic department expenditures and athletic success. However, it was narrow in scope due to its focus on football and men’s basketball specifically.

A study completed by Won (2004) investigated the influence of several types of resources on competitive advantage among several universities. This study looked specifically at NCAA Division I institutions and analyzed how variables from two different categories related to overall NACDA Director’s Cup points. The categories of resources were defined as tangible and intangible resources (Won, 2004). Within the category of tangible resources, Won included several financial variables whose relationships are valuable to this study, such as operating expenses, administrative expenses, coaches’ salaries, and athletic-related student aid (2004). Upon an analysis of data for 324 Division I institutions from the 2003-04 academic year, Won found statistically significant relationships between each of the financial variables and attainment of athletic department success (NACDA Directors’ Cup Points). Won determined that the generation of tangible resources leads to both increased athletic performance and the generation of intangible resources (i.e. athletic department reputation). Won concluded the following in his discussion of practical implications for NCAA athletics administrators:

While recognizing the distinction between intangible and tangible resources, administrators of intercollegiate athletics should also make efforts to generate both kinds of resources. They should also realize that the generation of tangible resources requires concerted efforts that bear fruits in the short run. For example, the goal of collecting a certain amount of dollars within a year would entail concerted and consistent media and personal campaign (Won, 2004, p. 116).

In summary, Won's conclusion justified increased athletic spending, as it is likely to result in improved athletic department performance.

Won's study was comprehensive in its analysis of a wide range of NCAA Division I institutional variables and their relation to athletic performance. However, the study was very limited in scope due to the fact that it only analyzed one year of data. This small sample of data limits the reliability of the study and leaves open the possibility that the year studied was atypical, not reflecting normal conditions. A more longitudinal look at this data would provide a more accurate depiction of the relationship between athletic expenditures and financial success.

A 2009 study completed by Lawrence, Li, Regas and Kander also looked at how athletic department resources were associated with Directors' Cup standings. This study was similar to Won's in that it only looked at data from one academic year (2006-07), but it included all NCAA Divisions and NAIA in its pool of institutions. Although the study-included institutions from each NCAA Division and NAIA, only the institutions that finished in the top 100 Directors' Cup standings in their respective divisions were included in the analysis (Lawrence, Li, Regas, & Kander, 2009). The study sought to determine if a relationship existed between overall financial spending and other specific areas of spending and Directors' Cup finish (Lawrence et al., 2009).

Improving on previous studies, Lawrence, Li, Regas and Kander examined more financial variables and their relation to Directors' Cup points than all studies previously discussed. Among all divisions studied, they found significance only in NCAA Division I for three specific variables: total expenses per team for women of all sports (except football and basketball) combined, total expenses not allocated by gender/sport (ex. administrative expenses), and average annual institutional salary per FTE (full time employee) for men's teams (Lawrence et al., 2009).

Similar to the shortcomings of Won's study, this study was limited in its data analysis considering only one year of data was included. Only analyzing one year of data may or may not provide an accurate depiction of the true relationships amongst variables studied. Two specific studies have been conducted since that built on the strengths of Lawrence's study by adding additional data to the analysis.

Jones (2012) conducted a similar study that accounted for the small data sample concerns by comparing athletic department expenditures to NACDA Directors' Cup points among all Division I schools listed in the EADA database for four years (2006-2007 through 2009-2010). Jones' limited his scope to those four years as they were the most recent and there were no changes in the Directors Cup scoring structure over that span (Jones, 2012). His primary independent variable was overall athletic department expenditures and his findings suggested that any impact of expenditures on success dependent on NCAA Division I subdivision:

When using EADA data, it was found that among FBS institutions a 1% increase in athletics expenditures was correlated with a 1.08 increase in Directors' Cup points.

Among FCS (Football Championship Subdivision) institutions, however, this relationship was significantly more negative. This finding suggests that the Directors' Cup points

earned by FBS and FCS athletic departments are affected very differently by changes in athletic expenditures (Jones, 2012, p. 13).

In addition, Jones did not find a statistical significance in the relationship between athletic department expenditures and Directors' Cup points among FBS institutions compared with that same relationship among Division I Non-Football schools, suggesting that both subdivisions yielded "an overall positive relationship between athletic expenditures and team on-field success" (Jones, 2012, p. 13). Although Jones made several significant findings in his study, his spending analysis focused on overall spending, without examining any categorical variables that may directly contribute to athletic success.

A further improved study within this field of research was conducted by Freeman (2012) and this took all previous limitations into account by examining the relationships between categorical spending variables and NACDA Directors' Cup points among NCAA Division I institutions for eight years (2003-2004 through 2010-2011). Freeman's study found statistically significant relationships between each of the athletic expenditure variables studied and relative athletic success (Freeman, 2012). Furthermore, Total Recruiting Expenses, Average Head Coaches' Salary, Total Number of Head Coaches (i.e. number of teams), and Total Expenses per Participant were all found to be significant predictors of Directors' Cup Points (Freeman, 2012). Although significant relationships were discovered, Freeman noted the following in his conclusion:

While we agree that administrators look to maximize opportunities for their teams' success, as they should, we would caution them against using our findings as a justification to spend more in the categories we've discussed. After a practical analysis of our statistical findings, we conclude that a thorough cost-benefit analysis is warranted

before labeling our findings “significant.” In essence, regardless of the overwhelming statistical significance of our analyses, they are not applicable to the “real world” of intercollegiate athletics. In sum, though the mathematical evidence suggests otherwise, greater expenditures in the categories studied here will not practically result in a significantly greater degree of success against peer institutions (Freeman, 2012, p. 53).

In summary, Freeman’s conclusion determined that intercollegiate athletics administrators shouldn’t apply his findings in a practical sense as the predictive equations derived from his findings resulted in impractical applications.

In terms of the goals of this study, Freeman’s study serves as the strongest example and foundation of which to build upon. Many categorical financial variables were used to relate athletic expenditures to overall athletic success. However, this study will improve upon Freeman’s by including sport specific expenditure data as well as various revenue variables into the analysis.

Relationships Between Athletic Success and Academic Success

One of the biggest challenges faced by NCAA student-athletes is the ability to balance success in the classroom with success in their respective sport. An incredible amount of time and energy is dedicated to athletic pursuit, arguably creating a greater challenge for student-athletes to achieve academically when compared to the normal student population. Although the challenge of the interplay between the student and the athlete may be at the core of intercollegiate athletics, there is a surprisingly small amount of research that has been conducted on the relationship between the two. However, three specific studies have been completed that have attempted to analyze the relationship between athletic and academic success of NCAA

student-athletes (Amato, Gandar, Tucker, & Zuber, 1996; Eigenbrot, 2012; Ferris, Finster, & McDonald, 2004).

A study completed by Amato, Gandar, Tucker and Zuber (1996) looked specifically at the relationship between team success and graduation rates of NCAA Division I-A and Division I-AA football programs. The studied population included all Division I-A and I-AA football programs from the graduating cohort of 1989. This study found a statistically significant and negative relationship between post-season game appearances among Division I-A football programs and graduation rates (Amato et al., 1996). Amato concluded, “It appears that the number of bowl appearances is indeed a substitute for, rather than a complement to, the academic success of football players” (Amato et al., 1996, p.193).

Amato’s study sought to determine an important relationship between athletic and academic success within intercollegiate athletics. However, this study is outdated and very limited in its analysis due to its concentration on one graduation cohort within the sport of football.

A study completed by Ferris, Finster and McDonald (2004) looked at the relationship between student-athlete graduation rates and overall athletic success among NCAA Division I FBS (formerly Division I-A) institutions. Their study utilized NCAA graduation rates and NACDA Directors’ Cup points and compared ten years of data from 1992-93 through 2002-03 (Ferris et al., 2004). Their study found a small positive correlation between overall athletic success and student-athlete graduation rates (Ferris et al., 2004). The results of this study refuted commonly held beliefs that student-athlete academic success is sacrificed for broad-based athletic success (Ferris et al., 2004). Although this study was sound in design, there are two main weaknesses. One weakness is the study was conducted more than ten years ago. Intercollegiate

athletics has seen much growth and change over the past 10 years, which could reflect different findings using more current data. A second weakness is that the graduation rate statistic used for this study is also currently outdated. The current study will build upon the work of Ferris, Finster, and McDonald (2004) and improve it with the use of the NCAA Graduation Success Rate and more recently collected data.

Lastly, a more recent study by Eigenbrot (2012) compared the relationship between athletic success and academic success by utilizing the current student-athlete graduation metric, the NCAA GSR. Eigenbrot compared football athletic success to academic success for Division I FBS football student-athletes across 120 institutions from the 2003-04 academic year to the 2009-10 academic year (Eigenbrot, 2012). His study did not find any significant relationships between athletic success of Division I FBS football programs (regular season record, bowl appearances) and NCAA Graduation Success Rates (Eigenbrot, 2012). Eigenbrot's study was similar to Amato's in that it only analyzed the academic and athletic success of football student-athletes. However, its use of the NCAA Graduation Success Rate as the academic success measurement sets a valuable example for this study.

As evidenced, the amount of research that has been completed pertaining to broad-based athletic success and academic success throughout NCAA Division I FBS is minimal. This study will improve and expand on previous studies aimed at examining this relationship.

Conclusion

As the attention and scrutiny of intercollegiate athletics finances intensifies, there are many unanswered questions pertaining to the return on investment. As long as intercollegiate athletics remain part of the academy, generating a financial "profit" will never be an explicitly

stated institutional goal. Therefore, the common goals among NCAA Division I institutions of educating student-athletes and achieving athletic success will likely remain. To that effect, does increased spending help achieve those goals? If athletic success is achieved, is academic success sacrificed? Those questions will be addressed as a result of this study.

Similar to previous studies, this one uses EADA and Directors' Cup data to explore the relationships between NCAA finances and athletic success. However, this study fills in the gaps of previous research by including important revenue and sport specific variables. It will also utilize NCAA GSR data to provide perspective on the relationship between academic success and the financial and athletic variables. Also, rather than taking a small sample over a few years, or looking at a single year's data, this study examines a wide range of available data in order to best describe the relationships between NCAA Division I FBS finances, athletic success and academic success.

CHAPTER 3

METHODOLOGY

Population

The population for this study consists of all NCAA Division I FBS institutions listed in the final Directors' Cup standings in the years 2004-05 through 2011-12. The financial data for those institutions was then pulled from the EADA database. The appropriate GSR data was also pulled to match the institutions listed in the final Directors' Cup standings. Only institutions that scored NACDA Directors' Cup points, submitted EADA reports, and reported NCAA GSR in a given year were included in the dataset. Therefore, the number of institutions analyzed varied each academic year.

Data Collection

The data needed for this study was collected from three separate, publicly accessible databases. The first database was the Equity in Athletics Data Analysis Cutting Tool, which is provided by the U.S. Department of Education. This database was utilized to collect financial data from the institutions that comprise the sample. Even though Excel, SAS, and SPSS files were all available for download, only the "Institution Level" Excel files were downloaded for each year studied. Each year's file included NCAA Division IA (FBS) institutions, and the schools that did not score Directors' Cup points in a given year were removed. Once the EADA dataset was trimmed to NCAA Division I FBS institutions, it was trimmed further to show only

the information for the relevant categories. The financial categories that were used for the analysis were:

- Total athletic expenditures
- Total expenditures per participant
- Total football and men's basketball expenditures
- Total football and men's basketball revenues

The second database that was utilized was the NACDA Directors' Cup scoring database provided on the NACDA website. This database provided the Directors' Cup points scored for each Division I institution dating back to 1993. A pdf file labeled "final" was downloaded from each academic year from 2004-05 through 2011-12. Each pdf file was converted to Excel and then converted to a full datasheet. Any non-FBS institutions were removed from the data.

Since the Directors' Cup scoring system has not been consistent throughout all the years included in this study, all point totals were converted to a standard system, thus allowing all eight years of data to be used in one data set. This was done for each year by converting the top total point score to a score of 1000, establishing a "conversion factor." This conversion factor was then used to adjust all lower scores to the 1000 point scale. Analyses were based on these converted "Total Adjusted" Directors' Cup scores.

The third database was the NCAA's Graduation Success Rate database. This database provided the GSR data from all NCAA Division I institutions for academic years 2004-05 through 2011-12. However, this database did not provide GSR data in downloadable format. Each institutional overall GSR was manually entered into a dataset for each academic year.

Although all financial data was available through the EADA database, several calculations were required in order to come up with the appropriate numbers and ultimately variables for the study. The calculations for total expenditures per participant, total football and men's basketball expenditures, and total football and men's basketball revenues were completed as follows:

$$\text{Total Expenditures Per Participant} = \frac{\text{Grand Total Expenses}}{\text{Total Unduplicated Participants}}$$

$$\text{Total Football \& Men's Basketball Expenditures} = \text{Men's Basketball Expenses} + \text{Football Expenses}$$

$$\text{Total Football \& Men's Basketball Revenues} = \text{Men's Basketball Revenues} + \text{Football Revenues}$$

Data Reduction and Analysis

The full data spreadsheet contained all data for the entire eight year period. Data was analyzed using SPSS version 22.0 statistical software. Using the Total Adjusted Directors' Cup points as the criterion variable, a simple regression was run with each explanatory variable (Total Athletic Expenditures, Total Expenditures Per Participant, Total Football and Men's Basketball Expenditures, Total Football and Men's Basketball Revenue, NCAA GSR). Next, using the NCAA GSR as the criterion variable, a simple regression was run with four separate explanatory variables (Total Athletics Expenditures, Total Expenditures Per Participant, Total Football and Men's Basketball Expenditures, and Total Football and Men's Basketball Revenue). Then, again using the Adjusted Total Directors' Cup Points as the criterion variable, two separate multiple regressions were run using two explanatory variables (NCAA GSR and Total Athletics Expenditures, and NCAA GSR and Total Football and Men's Basketball Revenue).

CHAPTER 4

RESULTS

EADA, NACDA Directors' Cup, and NCAA GSR data for NCAA FBS Institutions were collected for every academic year from 2004-2005 to 2011-2012. After organizing the data for each year, all eight years were combined into a single data set for analysis, comprised of 834 total cases. Descriptive statistics for the variables of interest are found in Table 1.

Table 1

Descriptive Statistics For All Variables

	<i>Mean</i>	<i>Std. Dev.</i>	<i>N</i>
Total Adjusted Directors' Cup Points	314.92	237.033	834
Total Athletics Expenditures	\$49,765,002.92	\$25,054,190.51	834
Total Exp. Per Participant	\$97,119.22	\$40,586.13	834
Total Football and Men's Basketball Exp.	\$17,708,787.27	\$8,616,023.00	834
Total Football and Men's Basketball Rev.	\$30,288,295.77	\$22,335,357.89	834
NCAA GSR	77.45	8.69	834

Simple regression analyses were conducted, regressing Total Adjusted Directors' Cup Points on each explanatory variable. Next, simple regression analyses were conducted again, regressing NCAA GSR on each remaining explanatory variable. Finally, multiple regression

analyses were conducted, regressing Total Adjusted Directors' Cup Points on two explanatory variables in two separate analyses (NCAA GSR and Total Athletics Expenditures, and NCAA GSR and Total Football and Men's Basketball Revenue).

Simple Regression

For explanatory variables that were collected from EADA data, dollars were used for their units of value. Using those single dollar units in regression analyses would yield extremely small B values (slope of the linear regression), making it difficult to see what increase in Total Adjusted Directors Cup Points would be associated with a one dollar increase in an explanatory variable. Therefore, in order to see meaningful predictive relationships from the simple regressions, "department" explanatory variables (i.e. total expenditures, football and men's basketball expenditures, and football and men's basketball revenues) were analyzed using \$100,000 units for monetary data, while "individualized" expenses (i.e. total expenditures per participant) used \$10,000 units.

Regressing Total Adjusted Directors' Cup Points on each explanatory variable individually yielded statistically significant ($p < .001$) relationships for all explanatory variables as shown in Table 2, including Total Adjusted Directors' Cup Points and Total Athletics Expenditures, Total Expenditures per Participant, Total Football and Men's Basketball Expenditures, Total Football and Men's Basketball Revenues, and NCAA GSR. Results from these simple regressions addressed research questions 1a through 1e. Examining the coefficients of determination (R^2), over half of the variance in Total Adjusted Directors' Cup Points is associated with variability in only one of the explanatory variables, Total Athletics Expenditures (60.9%). The remaining explanatory variables regressed against Total Adjusted Directors' Cup Points accounted for lower but still significant associations in variability, totaling the following:

Total Expenditures Per Participant (32.5%), Total Football and Men's Basketball Expenditures (43.6%), Total Football and Men's Basketball Revenues (49.2%), and NCAA GSR (5.2%).

Table 2

Regressing Total Adjusted Directors' Cup Points on explanatory variables

	R	R ²	(Constant)	B	Beta	Sig.
Total Athletics Expenditures ¹	.781	.609	-52.587	.739	.781	.000
Total Expenditures Per Participant ²	.570	.325	-8.57	30.000	.570	.000
Total Football and Men's Basketball Expenditures ¹	.660	.436	-6.797	1.187	.660	.000
Total Football and Men's Basketball Revenues ¹	.701	.492	89.506	.744	.701	.000
NCAA GSR	.227	.052	-164.883	6.195	.227	.000

¹ Expenditure units in \$100,000s

² Expenditure units in \$10,000s

Regressing NCAA Graduation Success Rates on each explanatory variable individually also yielded significant results ($p < .001$) for all explanatory variables as shown in Table 3, including Total Athletics Expenditures, Total Expenditures per Participant, Total Football and Men's Basketball Expenditures, and Total Football and Men's Basketball Revenues. Results from these simple regressions addressed research questions 2a through 2d. Much smaller coefficients of determination (R^2) were seen in these regressions as compared to those regressed on Total Adjusted Directors' Cup Points. Total Athletics Expenditures, Total Expenditures Per Participant, Total Football and Men's Basketball Expenditures, and Total Football and Men's Basketball Revenues associated with 6.6%, 2.2%, 10.5% and 3.4% of the variance in NCAA Graduation Success Rates respectively.

Table 3

Regressing NCAA GSR on explanatory variables

	R	R ²	(Constant)	B	Beta	Sig.
Total Athletics Expenditures ¹	.258	.066	73.006	.009	.258	.000
Total Expenditures Per Participant ²	.147	.022	74.394	.315	.147	.000
Total Football and Men's Basketball Expenditures ¹	.323	.105	71.678	.033	.323	.000
Total Football and Men's Basketball Revenues ¹	.184	.034	75.286	.007	.184	.000

¹ Expenditure units in \$100,000s² Expenditure units in \$10,000s**Multiple Regression**

To examine the combined effect of several explanatory variables, two different multiple regression analyses were conducted. The first analysis regressed Total Adjusted Directors' Cup Points against the combined variables of NCAA GSR and Total Athletics Expenditures. The overall model produced a significant relationship between all three variables, addressing research question 1f. The explanatory variables of NCAA GSR and Total Athletics Expenditures together accounted for 61% of the variance in Total Adjusted Directors' Cup Points.

Table 4

Regressing Total Adjusted Directors' Cup Points on explanatory variables

	B	Beta	Sig.
(Constant)	-107.730		.020
NCAA GSR	.755	.028	.217
Total Athletics Expenditures ¹	.732	.773	.000
<hr/>			
Initial Model	R	R ²	
	.781	.610	

¹Expenditure units in \$100,000s

The second multiple regression analysis regressed Total Adjusted Directors' Cup Points against the combined variables of NCAA GSR and Total Football and Men's Basketball revenues. The overall model produced a significant relationship between all three variables, addressing research question 1g. The explanatory variables of NCAA GSR and Total Football and Men's Basketball Revenues together accounted for 50.2% of the variance in Total Adjusted Directors' Cup Points.

Table 5

Regressing Total Adjusted Directors' Cup Points on explanatory variables

	B	Beta	Sig.
(Constant)	-118.892		.023
NCAA GSR	2.768	.101	.000
Total Football and Men's Basketball Revenues ¹	.724	.683	.000
<hr/>			
Initial Model	R	R ²	
	.708	.502	

¹Expenditure units in \$100,000s

CHAPTER 5

DISCUSSION

Summary

There are many issues facing intercollegiate athletics today, with some of the most relevant being unsustainable costs, NCAA governance structure, congressional intervention, and the unionizing of athletes (Knight Commission on Intercollegiate Athletics, 2014). In March 2014, the Knight Commission invited some of the intercollegiate athletics industry's most vested parties to a meeting to discuss some of these key issues, and the topics of unsustainable costs and academic balance were at the top of the list (Robertson, 2014). At the meeting, it was noted that the gap in spending between student-athletes and regular students is largest among those institutions competing in the FBS and smallest among those institutions without football (Knight Commission on Intercollegiate Athletics, 2014). The fact that the discrepancy is most glaring at the FBS level indicates why so much scrutiny is placed on the FBS institutions. However, it was also noted that for institutions in the top spending quartile in the FBS, more significant growth in generated revenues has actually decreased the reliance on institutional funding through student fees and other sources (Knight Commission on Intercollegiate Athletics, 2014).

It is blatantly clear that FBS athletic departments are generating the most dollars and have demonstrated the largest growth in spending. The prevailing thought amongst FBS institutions is that money buys success. With that in mind, the purpose of this study was to determine whether relationships exist among NCAA Division I FBS athletic departments as it pertains to relative

competitive success, student-athlete academic success, and each of the following factors: (a) how much institutions spend on athletics overall, and per participant, (b) how much institutions spend on revenue sports and, (c) how much revenue institutions generate from revenue sports.

Eight years of data were used in the analysis, and statistically significant relationships were found between relative competitive success and each of the explanatory factors analyzed. Statistically significant relationships were also found between academic success and each of the factors analyzed. However, further examination provides a practical framing of the statistical significance of these findings.

Relative Competitive Success and Financial Explanatory Variables

This analysis identified statistically significant relationships between relative competitive success (Total Adjusted Directors' Cup Points) and each of the four financial-related explanatory variables, including Total Athletics Expenditures, Total Athletics Expenditures Per Participant, Total Football and Men's Basketball Expenditures, and Total Football and Men's Basketball Revenues. However, each explanatory variable produced a different coefficient of determination (R^2), indicating a different level of relationship, and ultimately the ability to predict practical significance.

Total Athletics Expenditures clearly had the strongest correlation to Directors' Cup points earned of all the variables examined ($R=.781$). Further, it was determined that 60.9% of the variation in Total Adjusted Directors' Cup Points earned was associated with the variation in Total Athletics Expenditures. This explanatory variable demonstrated the largest percentage of variation in Total Adjusted Directors' Cup Points than all other variables examined. Two studies previously completed found similar results when analyzing a broader sample that included all NCAA Division I institutions (Freeman, 2012; Jones, 2012). Freeman (2012) did not pursue a

predictive value in his study (Freeman, 2012). However, Jones did pursue a predictive value, calculating that among FBS institutions a 1% increase in athletics expenditures was correlated with a 1.08 increase in Directors' Cup points ($\beta = 107.67$, $r < .01$) (Jones, 2012).

Similar to Jones, this study was able to produce a predictive value. Assuming expenditure units of \$100,000s, this study calculates that a \$100,000 increase in Total Athletics Expenditures would result in a 0.739-point increase in Total Adjusted Directors Cup Points. These numbers indicate a chasm between statistical significance and practical significance. Using the mean found for Total Athletics Expenditures in this study (\$49,765,002.02), a \$100,000 increase in spending would equate a 0.2% increase in overall spending. If we were to assume that a 1% increase in spending (roughly \$497,650) were being considered by an FBS institution, this model would predict a 3.695 increase in Total Adjusted Directors' Cup points. This would not even equate to the 5 points earned by a team that finished 65th or lower in a non-bracketed NCAA championship, which is the lowest possible point total a team can earn for participating in an NCAA championship. Depending on the institution's standing in relation to others, that increase in points could potentially improve its Directors' Cup standing by one or two positions. Although incremental increases can have an impact in the Directors' Cup standings, these practical values produced by the model indicate that it would be unwise to assume that untargeted increases in spending will result in a predictable improvement in Director's Cup standings. However, that is not to diminish the finding that there is indeed a positive, statistically significant relationship. Further, it is appropriate to recommend that a general goal of increasing expenditures will likely result in improved broad-based athletic success.

The next independent variable analyzed was chosen in an effort to determine if the combination of spending and the amount of participating student-athletes has a significant impact

on overall Directors' Cup points. It was found that Total Expenditures Per Participant accounted for 32.5% of the variance in Total Adjusted Directors' Cup Points. Although a statistically significant relationship was found, this level of associated variance calls for some caution when attempting to predict values using the regression model. Based on the slope provided, this model predicts 30.0 more "adjusted" Directors' Cup points for every \$10,000 increase in Total Expenditures Per Participant. Although this potential increase in Directors' Cup points may seem substantial, it is important to put it in the proper perspective. Using the mean number of participants from this study (504), an increase of \$10,000 per participant would amount to a total budgetary increase of \$5.04 million. In 2012, Marshall finished with 31.07 Total Adjusted Directors' Cup Points, which was also last place. If they were to have added \$10,000 per participant to their overall budget, they would have been increasing their budget by \$3.78 million and expecting to move up 9 places in the standings to 99th place as a result. Although a jump in 9 places in the standings is a strong improvement, it would have taken a 14.7% budget increase for Marshall to achieve that position. This practical application again demonstrates that although there is a statistically significant relationship, the predictive model is limited and may not be useful to an administrator who is seeking to find an anticipated return on Directors' Cup points based on a particular investment.

The next financially related explanatory variables were chosen for the analysis in an effort to explain the relationship between overall relative success and the financial figures of the revenue sports specifically. First, Total Football and Men's Basketball Expenditures were regressed on relative success and it was found to account for 43.6% of the variance in Total Adjusted Directors' Cup Points. In terms of attempting to predict practical effects on Directors' Cup points, the model predicts that an increase in spending on Football and Men's Basketball of

\$100,000 results in an increase of 1.19 adjusted Directors' Cup points. Second, Total Football and Men's Basketball Revenues were regressed on relative success and it was found to account for 49.2% of the variance in Total Adjusted Directors' Cup Points. Although revenue was shown to account for a slightly larger percentage of the variance than expenditures, a growth of \$100,000 in revenue for Football and Men's Basketball would result in a 0.744-point increase in adjusted Directors' Cup points, which is less than what was predicted by a \$100,000 increase in expenses.

Although both predictive models may be limited as with those already discussed, an important discovery of this analysis lies with the difference in the predictive models of Football and Men's Basketball Expenditures and Total Athletics Expenditures. With the Football and Men's Basketball Expenditures model predicting a slightly higher increase in adjusted Directors' Cup points than the model for Total Athletics Expenditures, it is reasonable to conclude that investing in the revenue sports directly leads to a greater increase in overall relative success than a nonspecific, overall budget increase of equal size. According to the models, if an FBS institution were deciding how to invest an additional \$1,000,000, they would see a resulted increase of 7.39 or 11.87 adjusted Directors' Cup points if they were to earmark the increases to Total Athletic Expenditures or Total Football and Men's Basketball Expenditures respectively. As discussed above, a 4-point increase in total adjusted Directors' Cup points could certainly make a difference in the standings depending on the scores of the closest institutions, but it is not a monumental difference. However, it is certainly helpful practical knowledge for an administrator to know that there is a substantially different result in improvement of overall relative success when investing specifically in the revenue sports as opposed to general overall increases in expenditures.

Relative Competitive Success and Academic Success

This analysis also sought to identify the relationship between relative competitive success and academic success by regressing NCAA GSR on Total Adjusted Directors' Cup Points. It was determined that a positive and statistically significant relationship exists between the two variables. However, a weak correlation was discovered ($R=.227$) as well as a very low coefficient of determination ($R^2=.052$). Based on the slope of the model, it is predicted that a one percent increase in NCAA GSR can result in a 6.2-point increase in adjusted Directors' Cup points. Although, with only 5.2% of the variance in Total Adjusted Directors' Cup Points being associated with NCAA GSR, it is difficult to trust the accuracy of this model.

The goal of this analysis was to determine if athletic success is sacrificed as a result of academic success, or vice versa. Although the model appears to be insufficient as a predictive tool, the key takeaway from this analysis lies with the positive and statistically significant relationship found. Based on these findings, it is reasonable to conclude that academic success is not sacrificed as result of relative athletic success. These findings are also akin to literature previously discussed, specifically a study completed by Ferris in 2004. Ferris concluded "The results of this study refuted commonly held beliefs that student-athlete academic success is sacrificed for broad-based athletic success" (Ferris et al., 2004, p.567). The evidence concludes that high achievement on the fields of competition can indeed coincide with high achievement in terms of graduating student-athletes.

Academic Success and Financial Explanatory Variables

Turning to relating academic success and financial explanatory variables, this analysis identified statistically significant relationships between academic success (NCAA GSR) and each of the four financial-related explanatory variables, including Total Athletics Expenditures,

Total Athletics Expenditures per Participant, Total Football and Men's Basketball Expenditures, and Total Football and Men's Basketball Revenues. However, the entire group of financial-related explanatory variables produced much smaller coefficients of determination as compared to how they related to relative academic success.

Total Athletics Expenditures demonstrated a low correlation strength ($R=.258$) and is determined to be associated with 6.6% of the variance in NCAA GSR. Based on the model, an additional \$100,000 allocated to Total Athletics Expenditures can be expected to increase NCAA GSR by .009%. Next, Total Expenditures per Participant demonstrated an even lower correlation strength ($R=.147$) and was determined to be associated with 2.2% of the variance in NCAA GSR. The model of the slope predicts that an increase of \$10,000 in spending per participant would result in a .315% increase in NCAA GSR. Finally, Total Football and Men's Basketball Expenditures and Revenues also demonstrated weak correlations ($R=.323$ and $R=.184$) and associated with 10.5% and 3.4% of the variance respectively. An increase in Total Football and Men's Basketball Expenditures of \$100,000 predicts a boost in NCAA GSR of .033%, while the same financial increase in Total Football and Men's Basketball Revenue predicts an increase in NCAA GSR of .007%.

With no previous research being done to compare student-athlete graduation success to FBS institution financial data, there is no basis to build expectations or compare results. With each explanatory variable showing low correlations and coefficients of determination across the board, it is difficult to trust the predictive models of each. However, even if the models were to be trusted, each provides an insignificant improvement on NCAA GSR in the practical sense with increases in the respective financial variable. Results from these tests are conclusive to the point that an NCAA FBS administrator should not expect to see predictable improvements to

student-athlete graduation success based on increases in total athletics expenditures, total expenditures per participant, or total revenue sport expenditures and revenues. However, it is also safe to conclude that increases in these particular financial variables will not negatively impact student-athlete graduation success rates.

Future Research

As this study analyzed both overall departmental data and revenue sport data specifically, future research could dig down even further and seek to determine whether or not similar relationships exist among specific sport finances and overall relative success, particularly looking at football and men's basketball data individually. This study combines both sports and analyzed them as a revenue sport "package", but in consideration of the significant results found, it may be worth separating the two and determining which sports finances are more valuable investments in terms of overall athletic department success.

This study chose to use NCAA GSR as the measure of academic success. As NCAA GSR measures student-athlete graduation success, it is a lagging measurement that is reported 6 years after a cohort enrolls in college. As a result, the student-athletes that were on the teams that produced the Directors' Cup finishes may not have always been the same student-athletes that produced the academic results reported for that year. Future research could use a more "real-time" academic success measure such as NCAA APR.

Conclusions

This study supports the existence of statistically significant relationships between relative competitive success, student-athlete academic success, and multiple department-wide and revenue sport-specific financial variables. Though the strength of the correlations differed and

the predictive models varies, every variable analyzed related significantly with both Directors' Points and NCAA GSR. Many have questioned the belief that increases in athletic spending lead to greater athletic success. As the Knight Commission noted, "The growing emphasis on winning games and increasing television market share feeds the spending escalation because of the unfounded yet persistent belief that devoting more dollars to sports programs leads to greater athletic success and thus to greater revenues" (Knight Commission on Intercollegiate Athletics, 2010, p.3). Although some of the predictive abilities of the results of this study may be inefficient, it is appropriate to conclude that the results support the notion that increased spending leads to increases in broad-based athletic success. Use of the results of this study as a predictive tool may not be prudent for an NCAA FBS administrator seeking detailed forecasting, but they could certainly serve as a guide in terms of creating broad-based goals.

Another key discovery of this study relates to the finding that investment in revenue sports may be more beneficial to improvement in broad-based athletic success than an equal investment to the overall athletic department budget. It is commonly held that the revenue sports are the engine of athletic departments, and evidence of this study supports the notions that investment in revenue sports could result in greater returns on broad-based athletic success.

Finally, adding to evidence found in previous research, the conclusion can be made that academic success is not forfeited as a result of athletic success. It is certainly prudent for coaches and administrators to maintain appropriate balance between time spent on athletics and academics. However, this study shows that the balance maintained throughout the time period studied herein is conducive to achievement in both academics and athletics success.

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